

ARTDio

Intelligence Communication

IPF-2002L User Manual

V1.0



www.artdioinc.com

ArtDio Company, Inc.

Safety Instructions

- Do not attempt to service the product yourself. Any servicing of this product should be referred to qualified service personal.
- To avoid electric shock, do not put your finger, pin, wire, or any other metal objects into vents and gaps.
- To avoid accidental fire or electric shock, do not twist power cord or place it under heavy objects.
- The product should be connected to a power supply of the type described in the operating instructions or as marked on the product.
- To avoid hazard to children, dispose of the product's plastic packaging carefully.
- Please read all the instructions before using this product.

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1. Product Specification

Voice Interface	
Call control protocol	SIP(RFC-3261) or H.323 V4 or MGCP
Voice compression	G.711 A/μ -Law, G.723.1, G.729A/B/AB
Echo cancellation	G.165/G.167 16ms
Voice Process	Differential input/Differential output
Delayed (End to End)	< 100ms
Flow of the average	14K(G.723.1) ~ 51K(G.729) BPS
Other Support	Silence Suppression, VAD, CNG, Acoustic Echo Cancellation, Jitter Buffering, DTMF tone detection, E.164 Dial plan
LAN Interface	
Interfaces	Two 10/100 Base-T Auto-Negotiation, MDI/MDI-X Ethernet Port
Connectors	RJ-45 connector
Management	Web browser, Keypad on the Phone, LCD screen,
IP address	PPPoE, DHCP client, Static IP
Firmware Upgrade	FTP/TFTP
Transport Protocol	RTP/RTCP, UDP/TCP
General Information	
Power	100 ~ 240VAC, 50 ~ 60Hz 5VDC, 1A
Power consumption	5W
Working environment	Operation Temperature : 0 ~ 40°C (32° ~ 104°F) Storage Temperature : -30 ~ 65°C (-22° ~ 149°F) Relative Humidity : 10 ~ 95% Non Condensing
Certification	CE, FCC
Feature Keys	Called, Answered, Miss Call, Phone (Phone book/This Phone Number), Network-Setting (IP/Subnet Mask/Gateway/Server IP) Speedy Dial, Call Hold, Redial, Mute, Volume Up/Down, Hand-free.
Other information	100 Entries Phone Book IVR (English) Earphone/Microphone Connector NAT Pass-through (SIP with STUN) Call Hold, Call Mute, Call Status, Caller ID, Headset, Networking Status, Volume Adjustment, No Answer Call Forward, Busy Call Forward, Always Call Forward, Miss Call, Dialed Call, Answered Call, Last Number Redial, Speedy Dial, Web configuration, LCD Display, LED indicators...etc.

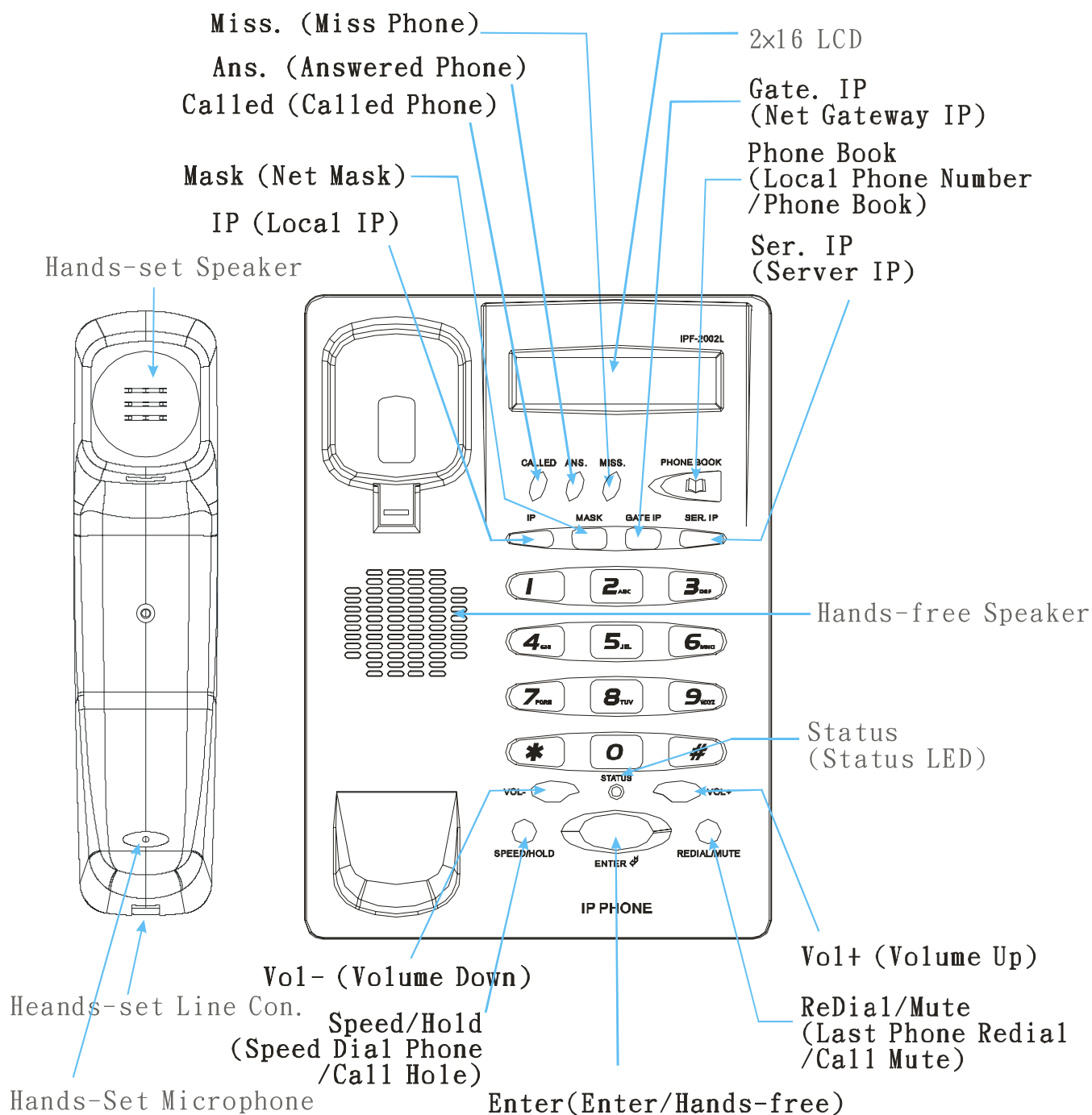
2. Package Contents

The IPF-2002L Series VoIP phone package contains:

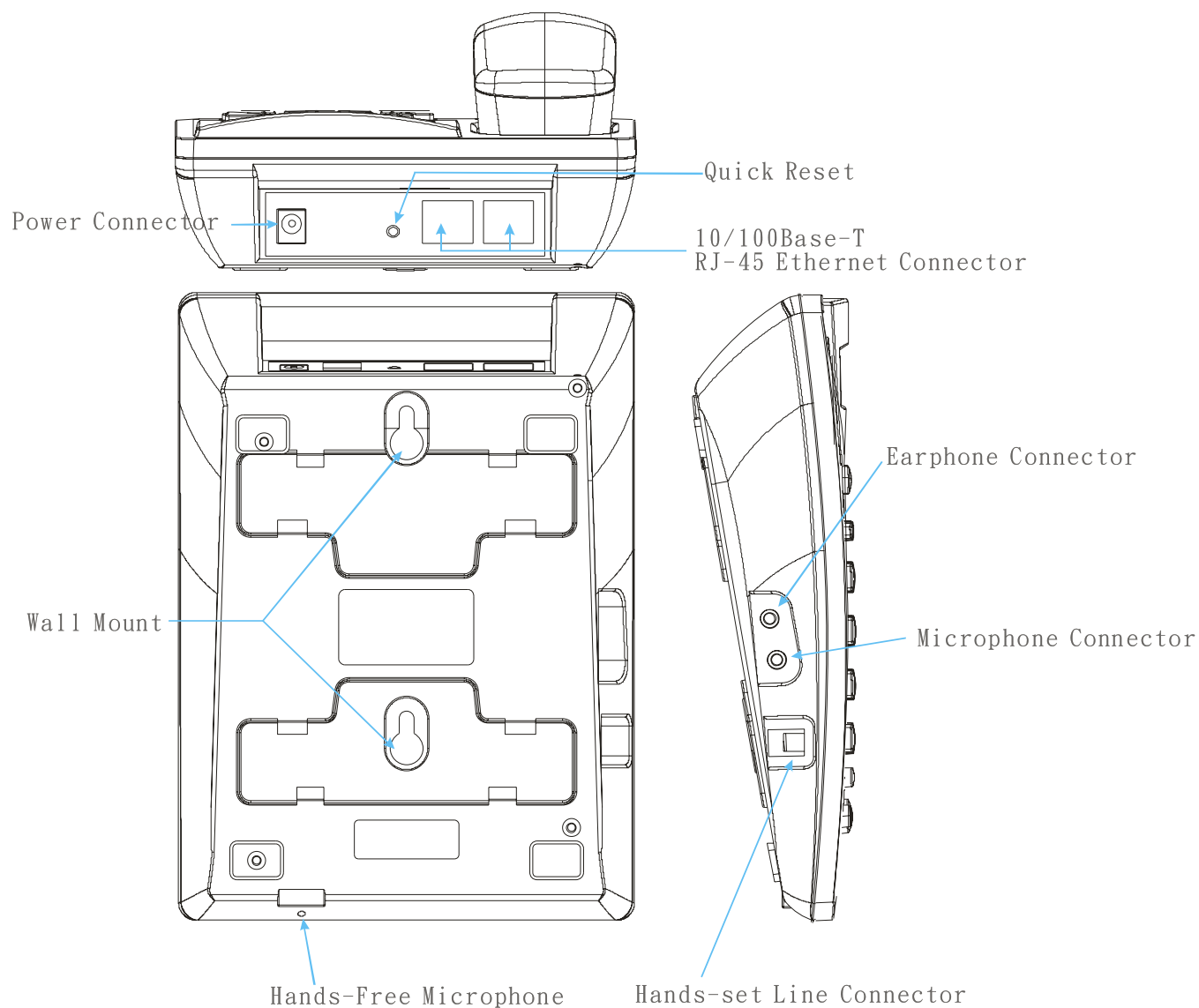
- One IPF-2002L VoIP phone
- One power adaptor
- One RJ-45 Ethernet cable
- Quick Installation Guide
- Installation CD

3. IPF-2002L Functions

3.1 Front Panel



3.2 Rear and Back Panel



3.3 Function Keys

Keys	Function
Called	With handset hung, press this button to display the phone number of the last call placed. In addition, press 【#】 to dial this number.
Ans.	With handset hung, press this button to display the phone number of an incoming call. In addition, press 【#】 to dial this number.
Miss	With handset hung, press this button to display the missed call number. In addition, press 【#】 to dial this number.
Phone	With handset hung, press this button to get the phone number of the phone. Press again will show the data in the phone book. In addition, press 【#】 to dial this number.
IP	With handset hung, press this button to get local IP address of the phone.
Mask	With handset hung, press this button to get the subnet mask of the IPF-2000.
GATE IP	With handset hung, press this button to get the gateway IP address in LAN.
SER .IP	With handset hung, press this button to get the service server IP address.
Hand Free	Press this button to turn on the speaker phone.
SPD / HOLD	Speed Dial; Hold
REDIAL / MUTE	Redial; Mute
VOL-	Decreases the volume of the handset or speaker; turns to the left hand side.
VOL +	Increases the volume of the handset or speaker; turns to the right hand side.
ENTER	With handset hung, press this button to allow you talk with hands-free; the "Confirm" button while configuration.

3.4 Status Indicators

Light	Description
Fast blinking green light	IPF-2002L is receiving a call.
Slow blinking green light	IPF-2002L is on phone.
Yellow light blink once	Booting IPF-2002L.
Red light blinking	IPF-2002L is not connected to the internet, disconnected, or fails to register to the server.

4. Hardware Installation:

Prepare your Internet information, and then follow the steps below to install your IPF-2002L.

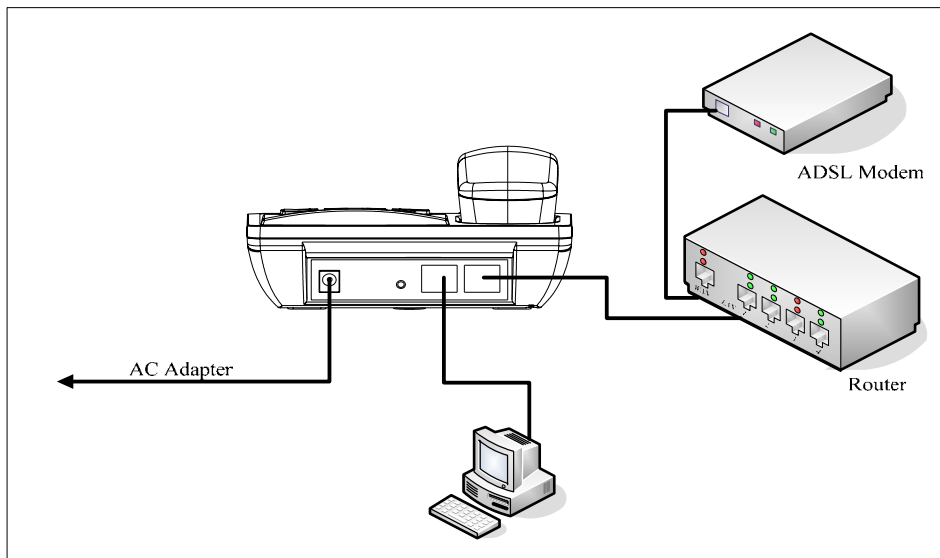
※ For the Cable ISP subscriber:

Cable ISPs usually provide DHCP to its subscribers, and each time they only allow one user to logon. Therefore, most ISPs require their subscribers report the MAC address of their internet device to allow them to use the service. If you want to apply another account for IPF-2002L, just simply report the MAC address of your IPF-2002L to your ISP provider.

If you want to use multiple internet devices in the same time, you need a router to connect to the ISP, and connect your internet devices to the router. Then replace the original MAC address to your router's MAC address.

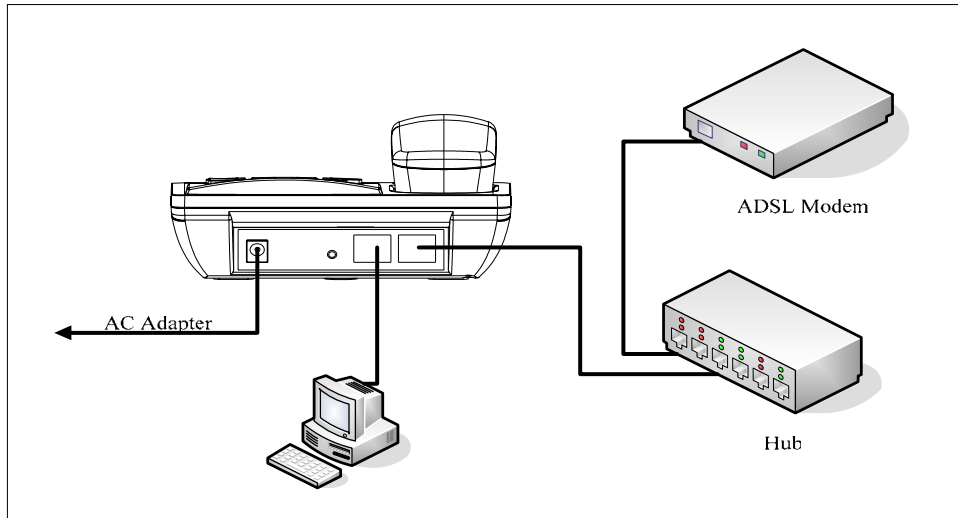
4.1 Connection with a Router

Plug one end of the RJ-45 cable to one of the LAN port on the IPF-2002L, and plug another end to one of the LAN port of your router. Once "Ready for call" is shown on the screen, the hardware installation is completed. There is another LAN port available for you to connect to another internet device or to your PC.



4.2 Connection without a Router

Plug one end of the RJ-45 cable to one of the LAN port on IPF-2002L, and plug another end to one of the LAN port of your HUB. Once "Ready for call" is shown on the screen, the hardware installation is completed. There is another LAN port available for you to connect to another internet device or to your PC.



5. Configure the IPF-2002L Using Keypad

IPF-2002L can be configured with its keypad or on a web page. The following table below illustrates the configuration function keys when using the keypad:

Keys	Function
SPD / HOLD	To change settings when using the keypad configuration
REDIAL / MUTE	To main menu options when using the keypad configuration
VOL -	To the next page when using the keypad configuration
VOL +	To the previous page when using the keypad configuration
Enter	To confirm the setting when using the keypad configuration

5.1 Network Settings:

The default network setting for IPF-2002L is DHCP. Therefore, if you connect your IPF-2002L to a DHCP network, it will direct connect to the Internet without any network setting.

If the network environment is PPPoE or Static IP, please change the network setting on your phone to PPPoE or Static IP. You can use the keypad to change your phone network setting. If you don't know what kind of network environment you are at, please contact your Internet Service Provider.

Use the keypad configuration and choose the **【network settings】**. Please configure your phone to DHCP, Static, or PPPoE according to your network environment.

5.1.1 PPPoE Setting

1. Connect the PPPoE network to the RJ-45 port of the IPF-2002L, and then plug in the power.
2. Press **1234#** (Hold the “#” key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】**.
3. Press **ENTER** → LCD shows **【iptype】** → press **SPD/HOLD** → Blinking cursor → Press **2** and then press **ENTER**. (2 sets your networking settings the PPPoE mode)
4. Press **ENTER** → LCD shows **【pppid】** → Press **SPD/HOLD** → Input PPPoE account number and then press **ENTER**.
5. Press **ENTER** → LCD shows **【pppin】** → Press **SPD/HOLD** → Input PPPoE password and then press **ENTER** → Press **ENTER** again to complete the configuration.

❖ If you want to input symbols or characters such as @, A, a, B, b, C, c, please refer to the keypad mapping table in Appendix 10.1.

5.1.2 Static IP Setting

Please input the Static IP comes from your ISP, or the Private IP address, Subnet Mask, and Default Gateway IP address in your company.

1. Connect the RJ-45 Ethernet Cable to the LAN port on the IPF-2002L, and then plug in the power.
2. Press **1234#** (Hold the “#” key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】** .
3. Press **ENTER** → LCD shows **【iptype】** → press **SPD/HOLD** → Blinking cursor → Press **0** and then press **ENTER**. (0 sets your networking settings to the Static IP mode)
4. Press **ENTER** → LCD shows **【ip】** → Press **SPD/HOLD** → Blinking cursor → Input IP address (**XXX*XXX*XXX*XXX**) and then press **ENTER**.
5. Press **ENTER** → LCD shows **【subnet mask】** → Press **SPD/HOLD** → Blinking cursor → Input Subnet Mask information (**XXX*XXX*XXX*XXX**) and then press **ENTER**.
6. Press **ENTER** → LCD shows **【router】** → Press **SPD/HOLD** → Blinking cursor → Input default gateway information (**XXX*XXX*XXX*XXX**, where X is any number or character) and then press **ENTER**.

5.1.3 DHCP Setting

1. Connect the RJ-45 cable to the LAN port on the IPF-2002L, and then plug in the power.
2. Press **1234#** (Hold the # key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】** .
3. Press **ENTER** → LCD shows **【iptype】** → Press **SPD/HOLD** → Blinking cursor → Press **1** and then press **ENTER** (1 sets your networking settings to the DHCP mode).

5.2 Protocol Settings

1. Press **1234#** (Hold the “#” key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】** → Press **VOL -** → LCD shows **【protocol settings】** .
2. Configure if IPF-2002L needs to login to the server.
【protocol settings】 → Press **ENTER** several times → LCD shows **【service】** .
 - If the IPF-2002L is not going to register on the server, press **SPD/HOLD** → Press **0** (Not register to the server) and then press **ENTER**.
 - If the IPF-2002L is going to register on the server, press **SPD/HOLD** → Press **1** (Register to the server) and then press **ENTER**.
3. Configure the server IP address on the IPF-2002L:
【protocol settings】 → Press **ENTER** several times → LCD shows **【service address】** → press **SPD/HOLD** → Input server IP address (**XXX*XXX*XXX*XXX**, where X is any number or character) and then press **ENTER**.

4. Enable the STUN service to penetrate the NAT network when using SIP protocol.
【protocol settings】 → Press **ENTER** several times → LCD shows 【nat traversal】 → Press **SPD/HOLD** → Press **4** (Enable STUN) and then press **ENTER** → Press **ENTER** → LCD shows 【nat addr】 → Input STUN server IP address (**XXX*XXX*XXX*XXX**, where X is any number or character) and then press **ENTER**.
5. Configure the IPF-2002L register type
【protocol settings】 → Press **ENTER** several times → Press **VOL+** several times → LCD shows 【local type】 → Press **SPD/HOLD**.
 - Press **0** (Input the phone number as E.164 to register to the server) and then press **ENTER**.
 - Press **1** (Input the account number) and then press **ENTER**. If this option is used, please also configure step 7 and 8.
6. Configure IPF-2002L register account.
【protocol settings】 → Press **ENTER** several times → LCD shows 【account】 → Press **SPD/HOLD** → Input register account (**XXX**) and then press **ENTER**.
7. Configure IPF-2002L account password.
【protocol settings】 → Press **ENTER** several times → LCD shows 【pin】 → Press **SPD/HOLD** → Input account password (**XXX**) and then press **ENTER**.
8. Configure IPF-2002L register port.
【protocol settings】 → Press **ENTER** several times → LCD shows 【register port】 → Press **SPD/HOLD** → Input register port (**XXX**) and then press **ENTER**.

5.3 Audio Settings:

1. Press **1234#** (Hold the “#” key) → LCD shows 【password】 → Press **1234** and then press **ENTER** → LCD shows 【network settings】 → Press **VOL –** several times → LCD shows 【audio settings】 .
2. Configure the codec type for IPF-2002L.
【audio settings】 → Press **ENTER** → LCD shows 【audio type】 → Press **SPD/HOLD**.
 - Press **0** (configure the codec as G.729) and then press **ENTER**.
 - Press **1** (configure the codec as G.723.1) and then press **ENTER**.
 - Press **2** (configure the codec as G.711u) and then press **ENTER**.
 - Press **3** (configure the codec as G.711a1) and then press **ENTER**.
 - Press **4** (configure the codec as auto) and then press **ENTER**.
3. Configure the volume of the phone handset and speaker.
【audio settings】 → Press **ENTER** several times → LCD shows 【handset in】 → Press **SPD/HOLD** → Input the volume of the phone handset and speaker (Default is 7, Max is 15) and then press **ENTER**.

5.4 Other Settings:

1. Press **1234#** (Hold the “#” key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】** → Press **VOL** – several times → LCD shows **【other settings】** .
2. Configure user password:
【other settings】 → Press **ENTER** → LCD shows **【password】** → Press **SPD/HOLD** → Input the new user password and then press **ENTER**.
3. Configure administrator password:
【other settings】 → Press **ENTER** several times → LCD shows **【super password】** → Press **SPD/HOLD** → Input the new administrator password and then press **ENTER**.

5.5 Speed Dial Settings:

1. Press **1234#** (Hold the “#” key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】** → Press **VOL** – several times → LCD shows **【speed dial settings】** .
2. Configure speed dial code and phone number:
【speed dial settings】 → Press **ENTER** → LCD shows **【memory 1】** → Press **SPD/HOLD** and input first speed dial code (can be any number or character) → Press **ENTER** → LCD shows **【number 1】** → Press **SPD/HOLD** and input first speed dial number (can only be any number) and then press **ENTER**.

Repeat the step 2 for more speed dial numbers. IPF-2002L has up to 100 entries speed dial numbers.

5.6 Default Settings:

Press **1234#** (Hold the “#” key) → LCD shows **【password】** → Press **1234** and then press **ENTER** → LCD shows **【network settings】** → Press **VOL** – several times → LCD shows **【default settings】** and then press **ENTER** → LCD shows **【Are You Sure?】** .

- If choose Yes, LCD shows **【Default ok】** then shows **【Undo default setting】** . Press **REDIAL/MUTE** several times until the LCD shows **【save settings】**, save the setting and reboot the IPF-2002L
- If choose No, IPF-2002L will not load the factory default settings.

5.7 Save Settings:

After all the configuration is done and correct, press **REDIAL/MUTE** several times until the LCD shows **【save settings】** → Press **ENTER** → LCD shows **【Are You Sure?】** .


- Press **ENTER** as Yes, IPF-2002L will reboot and load the new settings.
- Press **REDIAL/MUTE** as No, IPF-2002L will back to phone keypad configuration mode.

5.8 Exit Settings:

If you want to exit the keypad configure mode without saving any changes, press REDIAL/MUTE several times until the LCD shows **【Are You Sure?】** .

- Press **ENTER** as Yes, IPF-2002L will reboot.
- Press **REDIAL/MUTE** as No, IPF-2002L will back to phone keypad configuration mode.

6. WEB Configuration:

Start a Web browser, such as Microsoft's Internet Explorer (IE) , and enter the IPF-2000's IP address on the web browser. Address window

Address	192.168.1.100
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. The IPF-2002L Web configuration page is accessed by entering an assigned URL, or by pressing the **IP** button from on the IPF-2002L front panel to display the IP address.

The IPF-2002L login screen is displayed:

The IPF-2002L web configuration password comes with two categories: User password and Administrator password.

- The default User Password is **1234**.
- The default Administrator Password is **12345678**.

Enter one of the passwords and click the "**Submit**" button.

The following are the definitions for all the configuration parameters in the Web Configuration Page:

6.1 Network Settings:

network settings					
iptype	<input type="text" value="static"/>	ppp id	<input type="text"/>	ppp pin	<input type="text"/>
local ip	<input type="text" value="192.168.1.122"/>	subnet mask	<input type="text" value="255.255.255.0"/>	router ip	<input type="text" value="192.168.1.254"/>
dns	<input type="text" value="211.95.73.173"/>	dns2	<input type="text" value="211.95.73.173"/>		

Networking Parameter Values	
Fields	Description
iptype	<p>Set how IPF-2002L gets relevant network parameters by selecting corresponding item from drop down list.</p> <ul style="list-style-type: none"> • static Select this option to authorize users to configure IP address, subnet mask and router IP address of IPF-2002L. • dhcp Select this option to enable DHCP server automatically assign all the required network parameters to IPF-2002L • pppoe Select this option and then fill up the ppp id and ppp pin with PPPoE account and password to enable the PPPoE connection. The ISP will automatically assign all the required IP parameters to IPF-2002L.
ppp id	With PPPoE selected in iptype drop down list, please enter the user name in this field.
ppp pin	With PPPoE selected in iptype drop down list, please enter the password in this field.
local ip	With Static selected in iptype drop down list, please enter the IP address of the IPF-2000 in this field.
subnet mask	With Static selected in iptype drop down list, please enter the Subnet Mask

	address of the IPF-2002L in this field.
router ip	With Static selected in iptype drop down list, please enter the router IP address of the IPF-2002L in this field.
dns	With Static selected in iptype drop down list, please enter the IP address of the DNS server in this field.
dns2	With Static selected in iptype drop down list, please enter the IP address of the backup DNS server in this field.

6.2 Protocol Settings:

protocol settings					
protocol	SIP	use service	<input checked="" type="checkbox"/>	jitter size	0
service type	common	service addr		service id	
nat traversal	stun	nat addr		nat ttl	30
phone number		account		pin	
register port	5060	signal port	6800	control port	6800
register ttl	60	rtp tos	0	rtp port	6800
local type	account	call type	normal	dtnf	inband audio

Protocol Parameter Values	
Field	Description
protocol	<p>The IPF-2002L supports H.323, SIP and MGCP protocols.</p> <ul style="list-style-type: none"> If you are using a H.323 firmware, this field will be H.323. If you are using a SIP firmware, this field will be SIP. If you are using a MGCP firmware, this field will be MGCP.
use service	<p>Check this box if you will register to the server. Services response to different protocols as follows:</p> <ul style="list-style-type: none"> For the SIP protocol: Check this box if you will register to the server. Then, fill in the SIP proxy server IP address or domain name in the service addr field. For the H.323 protocol: Enter the Gatekeeper IP address. <ul style="list-style-type: none"> To allow the IPF-2002L calls each other by E.164 number: Please check this option and then fill the IP address or domain name of corresponding gatekeeper into the Service Addr. field. To make point to point calls to another voice gateway: Please do not check this option and fill up the voice gateway's IP address in the Service Addr. field. To make calls by dialing IP address of other IP Phone or H.323 devices (such as Netmeeting) at the same network segment, do not check this option and leave the Service Addr. field blank. <p>※ If the gatekeeper is not to be used, please configure the Service Port as 1720. Detailed information please refers to the Service Port configuration.</p> <ul style="list-style-type: none"> With MGCP protocol used, the protocol service refers to Call Agent. Please check this box according to system, and then fill Service Address field with the IP address or domain name of the Call Agent.

service type	The default service type is common. For other requests, please find the service type in the drop down list.
service addr	<ul style="list-style-type: none"> Use H.323 protocol <ul style="list-style-type: none"> If the Use Service option is checked, please fill up the IP address or the domain name of the gatekeeper. If the Use Service option is unchecked, please fill up the IP address or the domain name of the voice gateway. USE MGCP protocol: Please fill up the IP address or domain name of the Call Agent. Use SIP protocol: If the Use Service option is checked, please fill up the IP address or domain name of the SIP Proxy Server in this field.
service id	Set service ID according to requirement of system.
nat traversal	<p>When using a private IP to traverse the NAT, select one of the conditions:</p> <ul style="list-style-type: none"> disable <ul style="list-style-type: none"> When IPF-2002L is using a public IP, choose disable. When IPF-2002L is using SIP protocol, and is using the Outbound Proxy, choose disable enable <p>Automatically check the public IP of the NAT router. When IPF-2002L is using the private IP, please choose enable. After choosing enable, the nat addr will automatically activate. Without special request, please fill up 00.0.0.0 in the nat addr field and properly configure the port on the NAT router.</p> stun <p>Use the STUN protocol. STUN enables a device to find out its public IP address and the type of NAT service its sitting behind. It helps the SIP traverse the NAT. If this option is selected, please also fill up the IP address of the STUN server in the nat addr field.</p>
nat addr	<ul style="list-style-type: none"> When stun or enable is enabled in the nat traversal field, enter the NAT Proxy's IP address. Otherwise, keep this field as 0.0.0.0.
nat ttl	This defines how many seconds a NAT traversal message is will be sent to the NAT server. The default setting is 30 seconds.
phone number	With H.323/MGCP/SIP protocol used, enter the phone number of the IPF-2002L.
account	<ul style="list-style-type: none"> When using the H.323 protocol to logon gatekeeper, please fill up the H.323 ID or H.235 account. When choose the prefix in dialplan field, please fill up the number provided by ISR, card number and "#". For example 14589653185# With MGCP protocol used, please enter the Local name of the EndpointID into this field. With SIP protocol used, fill up the SIP Proxy account.
pin	<ul style="list-style-type: none"> When H.323 protocol is used to logon the gatekeeper, fill up the password or H.235 authentication password. When SIP protocol is used to logon SIP Proxy Server, please fill up the password into this field. When choose the prefix in the use dialplan drop-down menu, please fill

	<p>up the password provided by ISR, card number, and "#". For example 3185#.</p> <ul style="list-style-type: none"> With MGCP protocol used, enter the domain name of the EndpointID into this field. <p>※ With MGCP protocol is used, as requested by some system, please add the bracket with the domain name. For example, [voiptest.com].</p>
register port	<p>According to used protocol, set as follows:</p> <ul style="list-style-type: none"> With H.323 protocol used, <ul style="list-style-type: none"> If the gatekeeper is used, the register port works as the gatekeeper's monitor port. The default value is 1719. If the gatekeeper is not used, the register port works as the end point device or the gatekeeper's monitor port. The default value is 1720. With MGCP protocol used, this port is the Call Agent's receive port. The default value is 2727. With SIP protocol used, the default setting is 5060.
signal port	<p>With H.323 protocol used, this port is mapped to the Q.931 port. For H.323, the Q.931 call usually uses TCP protocol. The value can be set between 1024 and 65535.</p>
control port	<ul style="list-style-type: none"> With H.323 protocol used, this port is H.245 port using TCP protocol. H.245 protocol defines call control signal, and uses TCP protocol. The value can be set between 1024 and 65535. With MGCP and SIP used, there is no specific request for this port. You can enter any number. <p>※ If there are many IPF-2002L traversing the NAT at the same time, each IPF-2002L should be assigned with different port number.</p>
register ttl	<p>This defines how many seconds a register message will be sent to the server. The default setting is 60 second.</p>
rtp tos	<p>Fill TOS segment of IP header in RTP digital follow here. Detailed information please refer to IP protocol information.</p>
rtp port	<p>RTP port is the port transferring and receiving voice flow using UDP protocol. Please fill an even number between 1024 and 65535 into this field.</p>
local type	<p>This parameter refers to how IPF-2002L log in gatekeeper or SIP Proxy server. The meaning of each item is as follow:</p> <ul style="list-style-type: none"> Phone number: Use phone number as E.164 and H.323 ID to login the gatekeeper. Account Use account authentication to login. Please also fill up the account name and password into the account and pin fields. H.235 account With H.323 protocol used, if the gatekeeper supports H.235 protocol, please choose this option. Please also fill up the account name and password into the account and pin fields.
call type	<p>Set call type by selecting the items in drop down list. There are three options: normal, faststart, advanced. The recommended way is advanced.</p>
dtmf	<p>Set DTMF signal sending way by selecting control string, inband audio,</p>

signal keypad or RFC 28933 from drop down menu.

If you can not dial the extensions, please set the dtmf as inband audio.

6.3 Phone Settings:

phone settings					
use dialplan	<input type="text" value="disable"/>	dial number	<input type="text" value=""/>	ddcode	<input type="text" value="10"/>
iddcode	<input type="text" value="86"/>	iddprefix	<input type="text" value="00"/>	dddprefix	<input type="text" value="0"/>
local prefix	<input type="text" value="0"/>	nonlocal prefix	<input type="text" value="0"/>	ring type	<input type="text" value="dtmf0"/>
answer	<input type="text" value="5"/>	forward number	<input type="text" value=""/>	fwd always	<input checked="" type="checkbox"/>
fwd busy	<input checked="" type="checkbox"/>	fwd poweroff	<input checked="" type="checkbox"/>	fwd noanswer	<input checked="" type="checkbox"/>

Phone Parameter Values

Fields	Description
use dialplan	<p>Set whether use dial plan or use dial number by selecting the corresponding item in drop down list.</p> <ul style="list-style-type: none"> • disable Do not use dial plan or dial number by selecting this option. • enable Enable the dialing plan. This dialing plan should combine with the Regional Code and Area Code. Please follow the E.164 rule to setup the country code, area code and long distance code. • dialnum Use dial number by selecting this option. With this option selected, please enter the dial prefix into dial number field. • prefix • hotline This option enables the hotline function. When you pick up the handset or press ENTER, IPF-2002L will automatically dial the numbers configured in the dial number field. Please also fill up the number in the dial number field.
dial number	With dialnum selected in use dialplan drop down list, please enter the fial prefix into this field according to requirement of log in server.
ddcode	With enable or dialnum selected in use dialplan drop down list, set area code according to E.164 dial rule. For example, LA 626.
iddcode	With enable or dialnum selected in the drop down list, set country code according to E.164 dial rule. For example, U.S.A. 1; Taiwan 886; China 86.
iddprefix	With enable or dialnum selected in the drop down list, set international call prefix according to E.164 dial rule. For example, U.S.A. 011; Taiwan 002; China 00.
dddprefix	With enable or dialnum selected in the drop down list, set long distance call prefix according to E.164 dial rule. For example, U.S.A. 1; Taiwan 0.
local prefix	With enable selected in innerline drop down list, please fill the prefix number for a backup setting 1, such as 56.

nonlocal prefix	With enable selected in innerline drop down list, please fill the prefix number for a backup setting 2, such as 57.
answer	Enter a number from 0 through 60 to set the entries of the seconds before the phone answer the call auto or forward the call. To disable auto answer function, please set this parameter as 0.
ring type	Set ring type by selecting corresponding option from the drop down menu. <ul style="list-style-type: none"> • dtmf 0-9: Set ring as ordinary rings in different frequency. • not disturb: Sets the phone do no ring. • pcmring: Sets the ring to music. • user define: Sets to music saved by user by selection this option.
forward number	Enter receiving forwarded calls phone number into this field.
fwd poweroff	Forward calls if power off by checking this box. Please enter receiving forwarded calls phone number into forward number field.
fwd noanswer	Forward calls without replying by checking this box. Please enter receiving forwarded calls phone number into fwd number field, and enter the ring period in the answer field.
fwd always	Forward all calls. Please enter receiving forwarded calls phone number into forward number field.
fwd busy	Forward calls if busy. Please enter receiving forwarded calls phone number into forward number field, and enter the ring period in the answer field.

6.4 Audio Settings:

audio settings					
audio type	<input type="text" value="g7231"/>	audio frames	<input type="text" value="5"/>	g.723.1 high rate	<input checked="" type="checkbox"/>
vad	<input checked="" type="checkbox"/>	agc	<input checked="" type="checkbox"/>	aec	<input checked="" type="checkbox"/>
handset in	<input type="text" value="8"/>	handset out	<input type="text" value="20"/>	speaker out	<input type="text" value="23"/>

Audio Parameter Values	
Fields	Description
audio type	Set audio type of the phone by selecting item from drop down list. The options are g.711u, g.711a, g.723.1, g.729, g.729a, g.729b and auto.
audio frames	Sets audio frames in RTP package. With G.723 audio codec used, set it as 1; with G729 audio codec used, set it as 2. The recommendation value is 2.
g.723 high rate	With g.723.1 selected in audio type drop down list, enable/disable g.723.1 high rate (6.3K) by checking/unchecking this option.
vad	Enable/disable VAD (voice activity detection) by checking/unchecking this box.
agc	Enable/disable AGC (automatic gain control) by checking/unchecking this box.
aec	Enable/disable AEC (Acoustic echo canceller) by checking/unchecking this box.
handset in	Set the volume of handset input. The range is 1 to 15.

handset out	Set the volume of handset output. The range is 1 to 26.
speaker out	Set the volume of speaker. The range is 1 to 26.

6.5 Other Settings:

other settings			
password	<input type="text" value="1234"/>	super password	<input type="text" value="12345678"/>
sntp ip	<input type="text" value="210.59.100.157"/>		
use daylight	<input checked="" type="checkbox"/>	timezone	<input type="text" value="(GMT-12:00)Eniwetok, Kwajalein"/>

Other Parameter Values

Field	Description
password	Set the user's password. Should be no longer than 16 digits.
super password	Set the administrator's password. Should be no longer than 16 digits.
sntp ip	Fill IP address of the time server here.
use daylight	Enable/Disable daylight by checking/unchecking this option.
timezone	Select correct time zone in drop down menu.

6.6 Update

After configuration, please click Save/Reboot. IPF-2002L will save the setting and reboot. If the webpage goes back to login page, please login and configure again.

6.7 Phone Book

Click on Phone Book to access IPF-2002L phone book page.

Phone Book

No.	Name	Phone Number	No.	Name	Phone Number
001	<input type="text" value="artdio"/>	<input type="text" value="88635295000"/>	002	<input type="text"/>	<input type="text"/>
003	<input type="text"/>	<input type="text"/>	004	<input type="text"/>	<input type="text"/>
005	<input type="text"/>	<input type="text"/>	006	<input type="text"/>	<input type="text"/>
007	<input type="text"/>	<input type="text"/>	008	<input type="text"/>	<input type="text"/>

You may create a phone book entry by input the necessary information in their corresponding spaces. For example, if you want to add a new contact artdio with phone number 88635295000 to your No. 1 phone book entry, enter artdio in the Name field and enter 88635295000 in the Phone Number field.

After configure the phone book, click Save/Back to save the setting. Normally you can make a call by using **SPD/HOLD** key.

097	<input type="text"/>	<input type="text"/>	098	<input type="text"/>	<input type="text"/>
099	<input type="text"/>	<input type="text"/>	100	<input type="text"/>	<input type="text"/>

Save/Back

※ With H.323 protocol used without using the gatekeeper or voice gateway, you can enter the IP address of another IPF-2002L in the phone number field (use “*” instead of “.”). For example, enter 192*168*1*21 for IP address 192.168.1.21.

7. Passing through the NAT/Firewall:

When IPF-2002L works with NAT/Firewall, some of the following cases might happen:

1. With a valid account, IPF-2002L can not successfully register to the server.
2. IPF-2002L itself can make calls but is not able to receive calls.
3. One-way talk. One end can not hear any sound.

It might be the NAT/Firewall issues in these cases. IPF-2002L supports two methods to allow SIP passing through the NAT/Firewall by deploying STUN or Outbound Proxy.

7.1 SIP with STUN

protocol settings					
protocol	SIP	use service	<input checked="" type="checkbox"/>	jitter size	0
service type	common	service addr	SIP Proxy addr	service id	
nat traversal	stun	nat addr	STUN Server addr	nat ttl	30
phone number		account		pin	
register port	5060	signal port	6800	control port	6800
register ttl	60	rtp tos	0	rtp port	6800
local type	account	call type	normal	dtmf	inband audio

- service address: fill up the IP address or domain name of the SIP Proxy server.
- nat traversal: select STUN from the drop down list.
- nat addr: fill up the IP address and domain name of the STUN server.

7.2 SIP with Outbound Proxy

protocol settings					
protocol	SIP	use service	<input checked="" type="checkbox"/>	jitter size	0
service type	common	service addr	Out Bound Proxy: Port	service id	SIP Proxy addr
nat traversal	stun	nat addr		nat ttl	30
phone number		account		pin	
register port	5060	signal port	6800	control port	6800
register ttl	60	rtp tos	0	rtp port	6800
local type	account	call type	normal	dtmf	inband audio

- service address: fill up the IP address or domain name of the Outbound Proxy server. If the port of the Outbound Proxy is not 5060, please add ":" and the port number right after the IP address.
- service id: fill up the IP address or domain name of the SIP Proxy server.
- nat traversal: select disable.

7.3 Others

When H.323 and MGCP protocol used, please refer to the appendix H.323 and MGCP configuration examples. If IPF-2002L can not work this way, open the corresponding ports on the NAT/Firewall device.

Figure below shows the possible usage ports for the IPF-2002L. Please contact to the network administrator or MIS person to open these ports on the NAT/Firewall device:

- register port: for TCP/UDP protocol
- signal port: for TCP/UDP protocol
- control port: for TCP/UDP protocol
- rtp port: for UDP protocol

register port	5060	signal port	7800	control port	7802
register ttl	60	rtp tos	0	rtp port	7802

8. Registration Message

Once the account is successfully registered on the IPF-2002L, **【Ready for call】** will show on the screen, so does the time and date. If the registration is not successful, the LCD will display **【Logon Fail】** or **【Wait Logon ...】**. The possible reasons of the registration failure would be:

- Internet connection is fail. (Fail to acquire the IP address under the DHCP and PPPoE mode, or some IP configurations are wrong under the Static IP mode),
- Registration is fail. (Fail to register to the VoIP server)

9. Using IPF-2002L

9.1 Pickup the Phone

When there is an incoming phone call, the IPF-2002L will ring. There are three ways you can pick up the call:

- Use handset:
When the phone rings, pick up the handset to talk to the other end. When the call is end, hand up the handset.
- From handset to speaker:
If you are using the handset, press **ENTER** to transfer the call to speaker. Press **Enter** again to hand up the call.
- Use earphone:
Have your earphone plug into the earphone jack. When the phone rings, pick up the handset and place it aside the phone, then you can use the earphone to pick the phone.
- Use speaker:
When the phone rings, press **ENTER** button to pick up the call. Press **Enter** again to hand up the call.
- From speaker to handset:
If you are using the speaker, pick up the handset then you are able to pick up the call. Press **Enter** again to hand up the call.

9.2 Making Phone Calls

- Use handset:
Pickup the phone, after hearing the ring tone, you can dial the number. Enter **#** right after the number. Once you hear the “Du Du” tone from the phone, the phone on another side is ringing.
- Use earphone:
Have your earphone plug into the earphone jack. Pick up the handset and place it aside the phone, then you can use the earphone to pick the phone.

- Use speaker:

When the phone rings, press **ENTER** button to pick up the call. Press **Enter** again to hand up the call.

If you hear a busy tone after you dial, the other end is using the phone. Please hang up and make the call later. You can reach this number by pressing the REDIAL button on the phone.

9.3 Check the IPF-2002L Call Records

9.3.1 Check missed calls

Press the **MISS** button to review any missed call. You can return a missed call by simply press **#**. Press **VOL+** to view the next entry and press **VOL-** to view the previous entry.

9.3.2 Check received calls

Press the **ANS** button to review any answered call. You can return an answered call by simply press **#**. Press **VOL+** to view the next entry and press **VOL-** to view the previous entry.

9.3.1 Check dialed calls

Press the **CALLED** button to review any dialed call. You can return a dialed call by simply press **#**.

※ IPF-2002L is able to store a total of 80 Missed, Received, and Dialed call entries. When entries exceed its capacity, IPF-2002L will delete the oldest entry automatically. Records will be lost during power outage and reboot.

9.4 Speed Dial

Speed Dial feature can only used when entries are stored in the speed dial setting or in the phone book on web configuration.

The operating instructions are as follows:

1. If you want to dial the 10th speed dial number → press 10 on the IPF-2002L → press **SPD/HOLD**.
2. Press the PHONE button on the phone twice → LCD shows the phone number on the phone book → Press **VOL+** to view the next entry or press **VOL-** to view the previous entry → press **#** to dial this phone number.

9.5 Mute

Press **REDIAL/MUTE** button during a conversation to initiate this feature. LCD will show **【Mute On】** .

9.6 Hold

Press **SPD/HOLD** button during a conversation to hold a call. LCD on both side will show **【Call Hold】** .

10. Appendix

10.1 IPF-2002L Keypad and Symbols Mapping Table:

Number key	Press once	Press twice	Press 3 times	Press 4 times	Press 5 times
1	1	.	,	?	/!
2	2	A/a	B/b	C/c	【
3	3	D/d	E/e	F/f	】
4	4	G/g	H/h	I/i	*
5	5	J/j	K/k	L/l	
6	6	M/m	N/n	O/o	#
7	7	P/p	Q/q	R/r	S/s
8	8	T/t	U/u	V/v	
9	9	W/w	X/x	Y/y	Z/z
*	.				
0	0	Space	: /@	; /—	'/&
#	Switch to upper/lower case				

10.2 H.323 Web Configuration Example

With H.323 protocol used, please change the following parameters and leave the other setting as default.

protocol settings					
protocol	H.323	use service	<input checked="" type="checkbox"/>	jitter size	0
service type	common	service addr		service id	
nat traversal	stun	nat addr		nat ttl	30
phone number		account		pin	
register port	5060	signal port	6800	control port	6800
register ttl	60	rtp tos	0	rtp port	6800
local type	account	call type	normal	dtmf	inband audio

- use service: Check
- service type: Choose common if not specified by the VoIP service provider.
- service addr: Enter the IP address or domain name of the Gatekeeper of your VoIP service provider.
- nat traversal: Choose citron if not specified by the VoIP service provider.
- phone number: Enter the phone number provided from your VoIP service provider.
- account: Enter the account (H.323 ID) provided from you VoIP service provider.
- pin: Enter the account password provided from you VoIP service provider.

- register port: Normally will be 1719.
- signal port: Normally will be 1720.
- control port: Normally will be 1722.
- RTP port: Normally will be 1722.
- local type: Choose account if not specified by the VoIP service provider.

10.3 MGCP Web Configuration Exsample

With H.323 protocol used, please change the following parameters and leave the other setting as default.

protocol settings					
protocol	MGCP	use service	<input checked="" type="checkbox"/>	jitter size	<input type="text" value="0"/>
service type	<input type="text" value="common"/>	service addr	<input type="text"/>	service id	<input type="text"/>
nat traversal	<input type="text" value="stun"/>	nat addr	<input type="text"/>	nat ttl	<input type="text" value="30"/>
phone number	<input type="text"/>	account	<input type="text"/>	pin	<input type="text"/>
register port	<input type="text" value="5060"/>	signal port	<input type="text" value="6800"/>	control port	<input type="text" value="6800"/>
register ttl	<input type="text" value="60"/>	rtp tos	<input type="text" value="0"/>	rtp port	<input type="text" value="6800"/>
local type	<input type="text" value="account"/>	call type	<input type="text" value="normal"/>	dtmf	<input type="text" value="inband audio"/>

- use service: Check
- service type: Choose common if not specified by the VoIP service provider.
- service addr: Enter the IP address or domain name of the Gatekeeper of your VoIP service provider.
- nat traversal: Choose stun.
- nat addr: Enter the IP address or domain name of the NAT server of your VoIP service provider.
- phone Number: enter the phone number provided from your VoIP service provider.
- account: Normally will be aaln/0 if not specified by the VoIP service provider.
- pin: Enter the account password provided from you VoIP service provider.
- register port: Normally will be 2427.
- signal port: Normally will be 6800.
- control port: Normally will be 6800.
- RTP port: Normally will be 6800.
- local type: Choose phone number if not specified by the VoIP service provider.
- call type: Normally will be advanced.

10.4 How to Add a Prefix in Front of the Number

phone settings					
use dialplan	disable ▾	dial number		ddcode	10
iddcode	86	iddprefix	00	dddprefix	0
local prefix	0	nonlocal prefix	0	ring type	dtmf0 ▾
answer	5	forward number		fwd always	<input checked="" type="checkbox"/>
fwd busy	<input checked="" type="checkbox"/>	fwd poweroff	<input checked="" type="checkbox"/>	fwd noanswer	<input checked="" type="checkbox"/>

- use dialplan: Select dialnum.
- dial number: Enter the prefix you want to add. For example: 666.
- ddcode: Blank.
- iddcode: Blank.
- dddprefix: Blank.
- local prefix: Blank.
- nonlocal prefix: Blank.

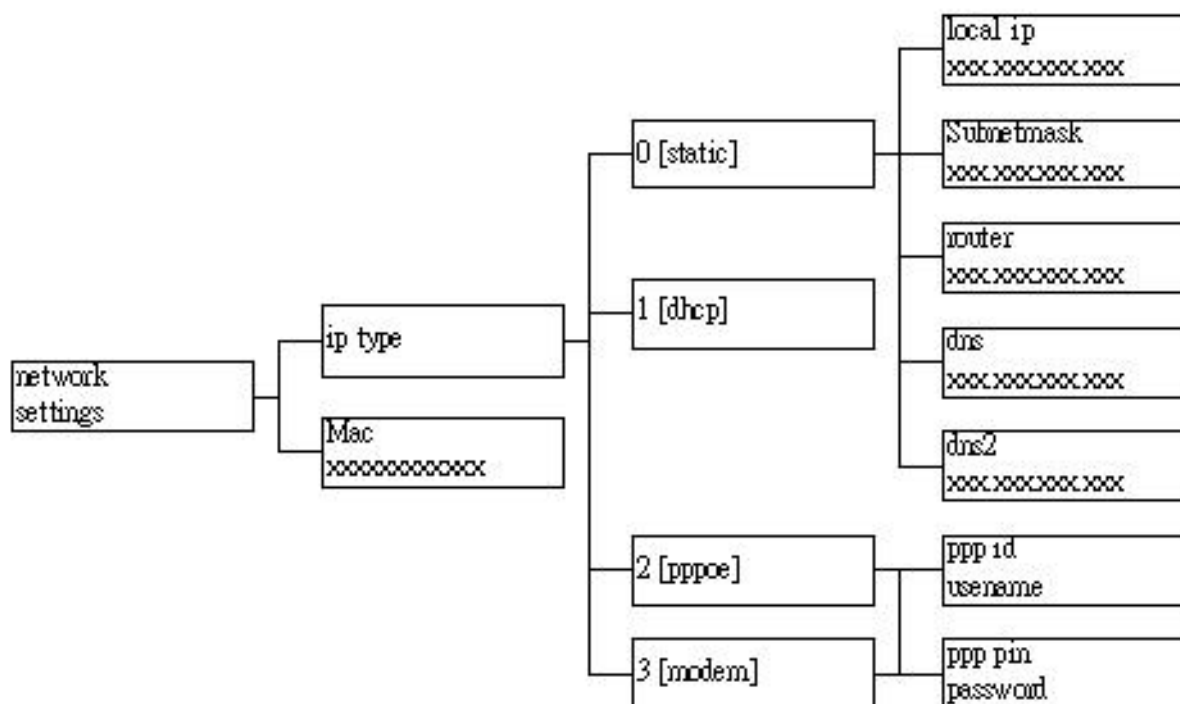
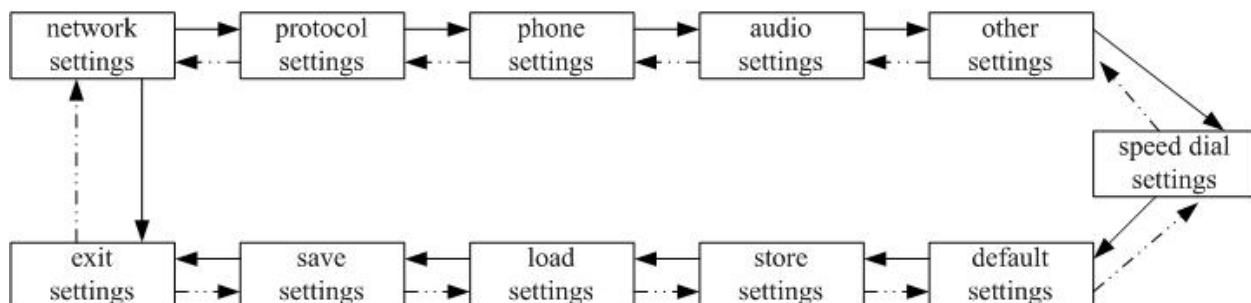
10.5 Some Troubleshooting

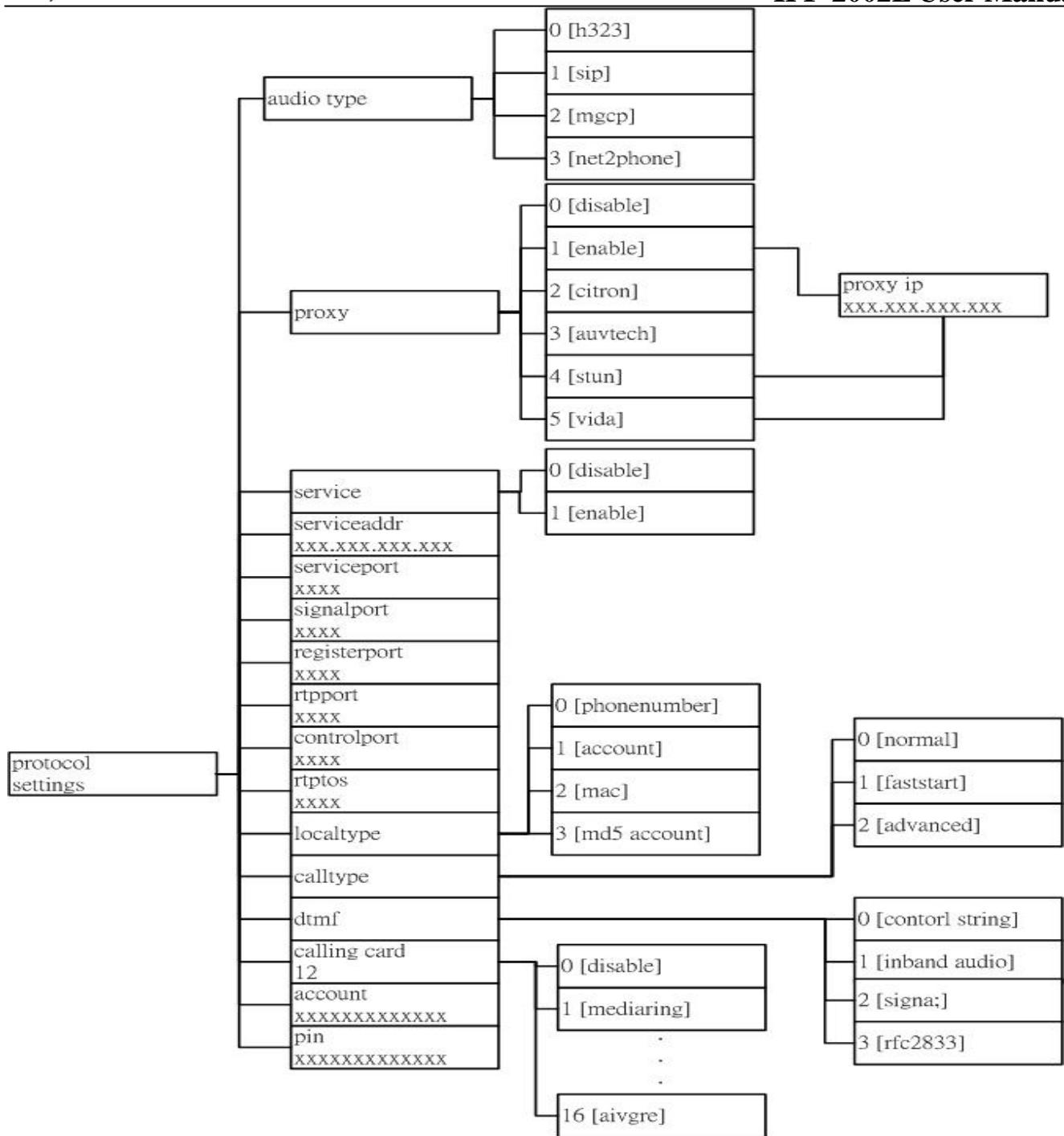
Problem:	Troubleshooting:
LCD display down or disorder	Unplug the power → Wait for 5 seconds → Plug the power back.
LCD shows 【Please dial】 , but the phone is unable to dial or hang up.	Unplug the power → Wait for 5 seconds → Plug the power back.
LCD shows 【Wait Logon ...】 , 【Log On】 , or 【Log On Failed】	<ol style="list-style-type: none"> 1. Please check the Internet connection of the RJ-45 is ok. 2. Please check if the IPF-2002L is able to acquire an IP address. If not, please check the Network Setting and see if the configuration is correct. 3. Please verify that the account is valid. Please contact you VoIP service provider for the account information.
LCD shows 【Ready for call】. However, when dialing the phone number, the LCD shows 【Please Hangup】	Please verify that the account is valid. Please contact your VoIP service provider for the account information.
Hear echo during the conversation	Please press VOL – to the proper volume.
Noise	Please check the connection and see if the connection is loose.
Reset to the factory default	<ol style="list-style-type: none"> 1. Press and hold the keypad * → Unplug the power → Plug the power → the IPF-2002L will reboot. 2. LCD shows 【*】 → Release the keypad * → Press #5*5 → the IPF-2002L will reboot. 3. After rebooting, the phone set to be the factory default.

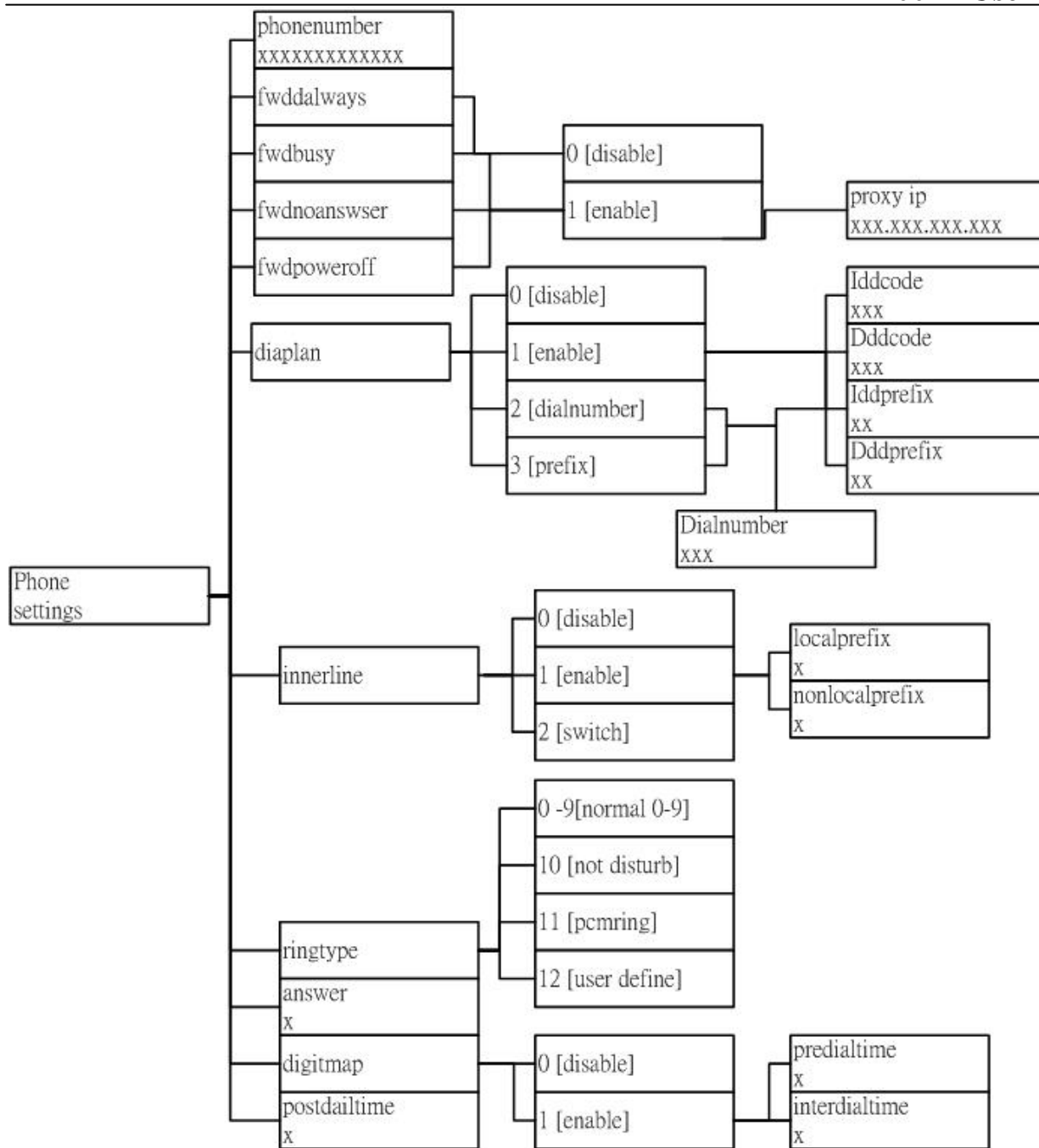
10.6 IPF-2002L Keypad Selection Tree (Using administrator password)

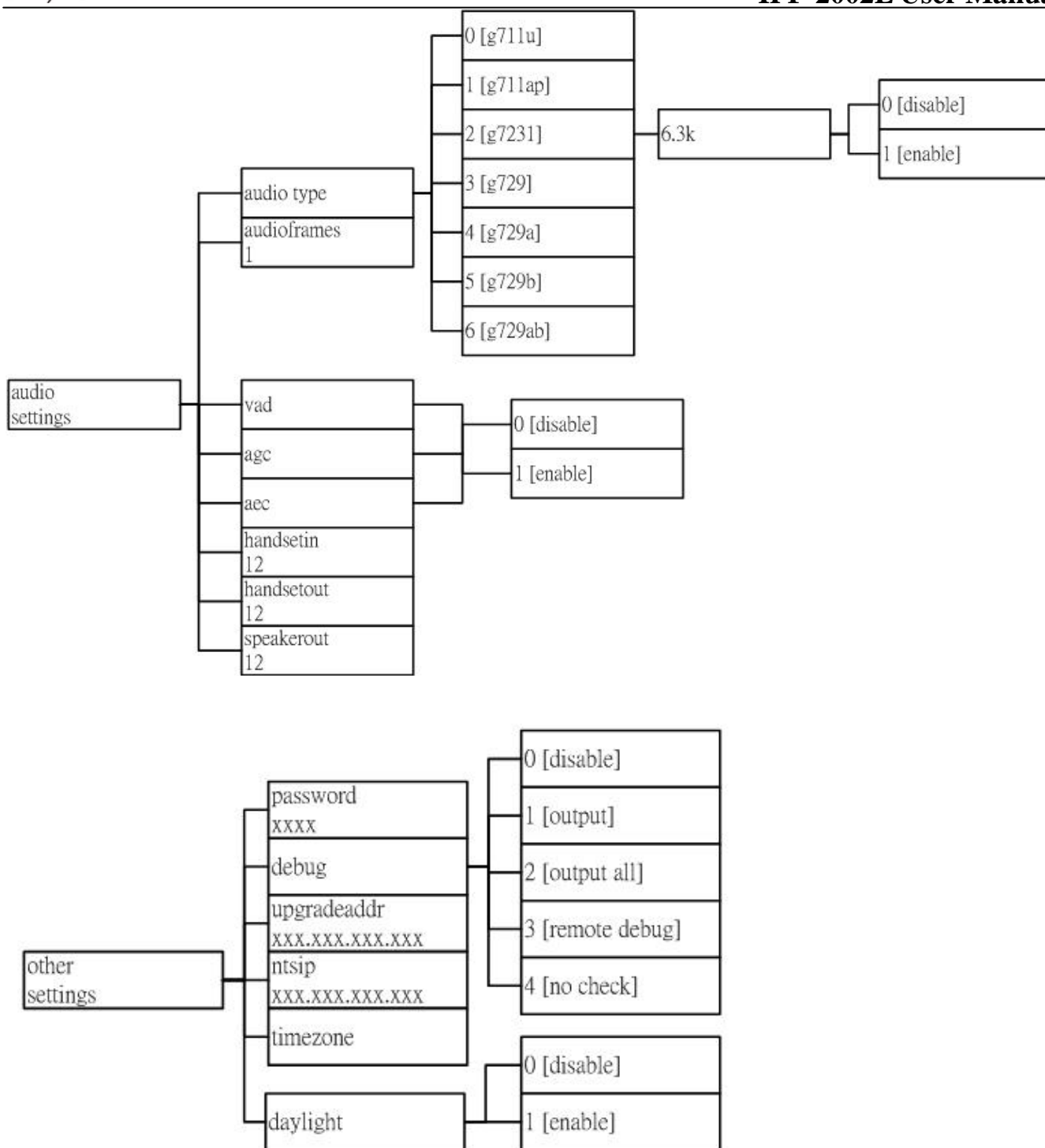
————→ Press Vol - key

- - - - -> Press Vol + key









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